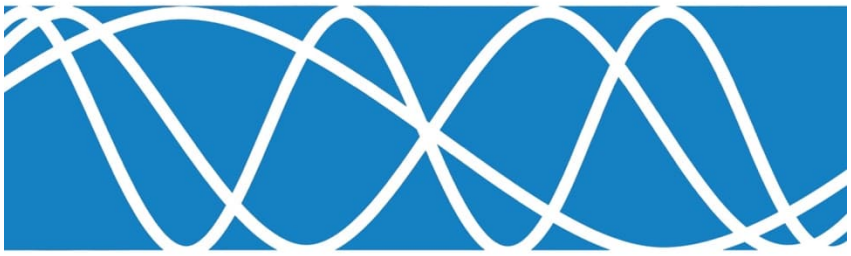
Noise Feasibility Study

Proposed Truss Manufacturing Facility

264549 Southgate Road 26 Southgate, Ontario

October 3, 2025
HGC Project #: 02400766



Prepared for:

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Version Control
Noise Feasibility Study,
264549 Southgate Road 26,
Southgate, Ontario

Ver.	Date	Version Description	Prepared By
1.0	October 3, 2025	Noise Feasibility Study in support of the ZBA approvals process.	[redacted]

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Howe Gastmeier Chapnik Limited

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Table of Contents

1 INTRODUCTION AND SUMMARY

HGC Noise Vibration Acoustics was retained by EMS Construction Inc. to undertake a noise assessment for a proposed truss manufacturing facility located at 264549 Southgate Road 26 in Southgate, Ontario. The noise study is required as part of the approvals process, specifically for Zoning By-law Amendment (ZBA). The study has been completed in accordance with the guidelines of the Ministry of Environment, Conservation, and Parks (MECP).

An investigation of the potential noise impact of the proposed truss manufacturing facility onto the neighbouring sensitive receptors was conducted. The analysis is based on information obtained from discussion with EMS Construction Inc. personnel, visits to the site of the proposed facility, a nearby existing truss manufacturing facility, and HGC's past experience with similar facilities. The analysis includes an assessment of the noise emissions of the anticipated manufacturing processes with respect to the closest noise sensitive receptors.

The results of the analysis indicate the truss manufacturing facility is feasible at the site and sound levels are expected to be within the limits of the MECP guidelines at the noise sensitive receptors. The reader is referred to the main body of the report for assumptions and results of the analysis.

The acoustic recommendations may be subject to modifications if the site plan is changed significantly, operating scenarios are significantly different to those assumed in the assessment, or there is a significant increase in background sound levels.

2 SITE DESCRIPTION

The site is located on the north side of Southgate Road 26, specifically at 264549 Southgate Road 26, in Southgate, Ontario. Figure 1 shows a key plan of the area [1]. The site proposes a truss manufacturing workshop, utility room building, storage yard, and loading area, as indicated on the site plan dated September 1, 2025, which is attached as Figure 2. Drawings for the proposed truss manufacturing facility are included in Appendix A.

HGC personnel visited the site on September 17, 2025 to confirm the locations of the existing sensitive receptors and observe the acoustical environment. An existing truss manufacturing facility was also visited to observe typical operations and measure sound levels from typical activities. The area surrounding the subject site is best categorized as a Class 3 (Rural) acoustical environment under MECP noise assessment guidelines, where the sound levels are dominated by natural sounds having little or no road traffic. The most potentially impacted existing residences are located to the west and south of the site. These residences are located on agricultural zoned lands. The Southgate and County of Grey Official Plans also designate the existing residences on agricultural lands [2][3].

2.1 Noise Source Description

The primary sources of sound associated with the proposed truss manufacturing facility will include truss assembly noises from within the workshop, exhaust fans for the workshop and utility room, forklift activity in the yard, a circular saw, and arriving, departing, and idling trucks. The facility will operate during daytime hours only (07:00-17:00). The manufacturing building is to be of a concrete block wall construction with insulated metal roof. All access doors for ingress and egress of materials are located on the facades of the building facing away from the residences. The building will be ventilated through a passive inlet louvre and an exhaust fan. The facility will typically operate with open doors during summer months for ventilation purposes.

3 SOUND LEVEL CRITERIA

3.1 Criteria Governing Stationary Noise Sources

MECP Guideline NPC-300 is the MECP guideline for use in investigating Land Use Compatibility issues with regard to noise [4]. An industrial or commercial facility is classified in the MECP Guideline NPC-300 as a stationary source of sound (as compared to sources such as traffic or construction, for example) for noise assessment purposes. Stationary noise sources encompass the noise from all the activities and equipment within the property boundary of a facility including regular on-site truck traffic, material handling, and mechanical equipment. In terms of background sound, the development is located in a rural Class 3 acoustical environment which is characterized by an acoustical environment dominated by natural sounds.

NPC-300 is intended for use in the planning of both residential and commercial/industrial land uses and provides the acceptability limits for sound due to commercial operations in that regard. The façade of a residence (i.e., in the plane of a window), or any associated usable outdoor area (within 30 m of a dwelling façade) are considered the sensitive points of reception. NPC-300 stipulates that the exclusionary sound level limit for a stationary noise source in a rural Class 3 area is taken to be 45 dBA during daytime hours (07:00 to 19:00), and 40 dBA during evening/nighttime hours (19:00 to 07:00). If the background sound levels due to road traffic exceed the exclusionary limits, then that background sound level becomes the criterion. The background sound level is defined as the sound level that occurs when the source under consideration is not operating and may include traffic noise and natural sounds. The exclusionary minimum limits are used as the criteria to assess the impact of the proposed operations in the following sections of this report.

Commercial activities such as the occasional movement of customer/employee vehicles and garbage collection are not of themselves considered to be significant noise sources in the MECP guidelines. Accordingly, these sources have not been considered in this study. Noise from safety equipment (e.g. back-

up beepers) is also exempt from consideration as they are required in accordance with Ministry of Labour and good safety practices.

Acceptability limits for frequently occurring sounds that are impulsive in character (such as those from hammering or using a nail gun) are also provided in NPC-300. The limit is determined in a similar fashion to non-impulsive sounds as outlined above and the same limits apply in this case.

Three existing residences near the site are considered to be the representative noise sensitive receptors (R1 to R3) in this study. R1 and R2 are 1-storey homes and R3 is a 2-storey home. Receptor locations are shown on Figures 3 and 4.

Compliance with MECP criteria generally results in acceptable levels of sound at the sensitive receptors although there may be residual audibility during periods of low background sound.

4 ASSESSMENT METHODOLOGY

Predictive noise modelling was used to assess the potential noise impact of the workshop activities, mechanical equipment, and trucking activities at the residential receptors. Operational information outlined below and the locations of the surrounding buildings, obtained from aerial photography, were used as input to a predictive computer model (Cadna/A 2025 build: 209.5501), in order to estimate the sound levels from the proposed use at the noise sensitive receptors. Cadna/A is a computer implementation of ISO Standard 9613-2 which considers attenuation due to distance (geometrical spreading), shielding by intervening structures (such as barriers), air attenuation, and ground absorption [5]. Additional modeling information is provided in Appendix B.

Figure 3 shows the steady noise source locations and Figure 4 shows the impulsive noise source locations. Workshop activity, exhaust fans, generator, air compressor, circular saw, and truck idling noise sources are shown as green crosses. Truck movements are shown as green lines. Forklift activity is shown as

a green hatched area. In this impact assessment, we have considered the following worst-case (busiest hour) scenarios for the daytime hours. No activity will occur during the evening or nighttime hours as this is outside of the indicated business hours.

Assumed day worst-case hour scenario:

- Truss manufacturing noise from within the workshop noise occurs continuously and exit the building through open doors and process openings;
- Exhaust fans for the workshop and utility room, the generator, and the air compressor operate continuously;
- A forklift moves raw wood and stacked trusses in the storage yard for 30 minutes;
- A circular saw is used to create blocking for the stacked trusses for 5 minutes;
- 1 truck arrives and departs the loading area (2 truck trips);
- The truck is assumed to idle in the loading area for 15 minutes;

Additional information and assumptions used in the analysis:

- Operational information was obtained from a site visit to an existing truss manufacturing facility;
- The workshop and utility room are ventilated with exhaust fans;
- The facility operates during daytime hours only;
- The height of the proposed building is 6.81 m;

Sound emission data for the workshop activity, exhaust fans, generator, and air compressor were obtained from on-site measurements at the existing truss manufacturing facility. Sound emission data for the circular saw, trucking activities, and forklift activities was obtained from HGC project files which were measured from past similar projects. The sound power levels for the stationary noise sources used in the analysis are summarized in Table 1.

Table 1: Source Sound Power Levels [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]								Overall [dBA]/ [dBAI]
	63	125	250	500	1k	2k	4k	8k	
Exhaust Fan	80	80	77	74	73	72	64	59	83
Utility Room Air Inlet	78	77	73	79	76	74	73	71	87
Forklift Activity	99	95	91	91	91	88	82	76	95
Circular Saw	69	73	88	99	97	99	98	94	108
Truck, idling	96	91	88	88	91	90	81	70	95
Truck, movement	101	100	94	96	97	95	91	86	101
Main Garage Door (Steady)	58	63	59	69	62	59	54	44	72
Outfeed Garage Door (Steady)	79	84	77	72	66	67	64	62	80
Workshop Air Inlet (Steady)	45	50	46	56	49	46	41	32	59
Main Garage Door (Impulsive)	65	71	80	84	88	84	75	65	95
Outfeed Garage Door (Impulsive)	85	93	90	91	88	89	83	81	99
Workshop Air Inlet (Impulsive)	52	58	67	71	75	71	62	52	82

5 ASSESSMENT RESULTS AND RECOMMENDATIONS

Non-Impulsive Sources

The predicted sound levels due to the operations of the steady stationary noise sources associated with the proposed truss manufacturing facility at the representative receptors (R1 to R3) during a worst-case busiest hour operating scenario, are summarized in Table 2 and shown on Figure 3. Cadna/A calculation summaries are provided in Appendix B.

Table 2: Predicted Non-Impulsive Source Sound Levels at Residential Receptors (Without Mitigation), L_{EQ} [dBA]

Receptor	Description	Daytime OLA	Daytime Façade	Criteria Met
R1	264539 Southgate Road 26	41	<40	Y
R2	264540 Southgate Road 26	<40	<40	Y
R3	264542 Southgate Road 26	<40	<40	Y

Impulsive Sources

The predicted impulsive sound levels are provided in Figure 4 and also summarized in Table 3.

Table 3: Predicted Impulsive Source Sound Levels at Residential Receptors (Without Mitigation), L_{LM} [dBAI]

Receptor	Description	Predicted Impulsive Sound Levels, OLA (dBAI)	Predicted Impulsive Sound Levels, Façade (dBAI)	Criteria Met
R1	264539 Southgate Road 26	<40	<40	Y
R2	264540 Southgate Road 26	<40	<40	Y
R3	264542 Southgate Road 26	<40	<40	Y

The results of this analysis indicate that the predicted sound levels due to the steady and impulsive noise sources at the proposed facility are expected to be within the MECP sound level limits at the noise sensitive receptors during an assumed worst-case operational scenario. Noise mitigation measures are not required.

6 CONCLUSIONS

Assuming typical worst-case operating scenarios associated with the proposed truss manufacturing facility as described above, the acoustical analysis indicates that the potential noise impact from the facility is expected to meet the applicable MECP criteria at the nearest noise sensitive receptors without additional noise mitigation measures. Therefore, the proposed facility is feasible from a noise perspective.

The acoustic recommendations may be subject to modifications if the site plan is changed significantly, operating scenarios are significantly different to those assumed in the assessment, or there is a significant increase in background sound levels.

7 REFERENCES

1. *Google Earth, July 23, 2022, Southgate, ON Canada, 44°09'34"N, 80°38'19"W, "earth.google.com/web", Accessed September 26, 2025.*

2. *Ron Davidson Land Use Planning Consultant Inc., Township of Southgate Official Plan, Southgate, ON, May 24, 2022.*

3. *County of Grey, Recolour Grey, County of Grey Official Plan, Grey County, ON, May 6, 2025.*

4. *Ontario Ministry of the Environment Publication NPC-300, Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning, August 2013.*

5. *International Organization for Standardization, Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: Engineering Method for the Prediction of Sound Pressure Levels Outdoors, ISO-9613-2.2, Switzerland, January 2024.*

Figure 1 – Key Plan

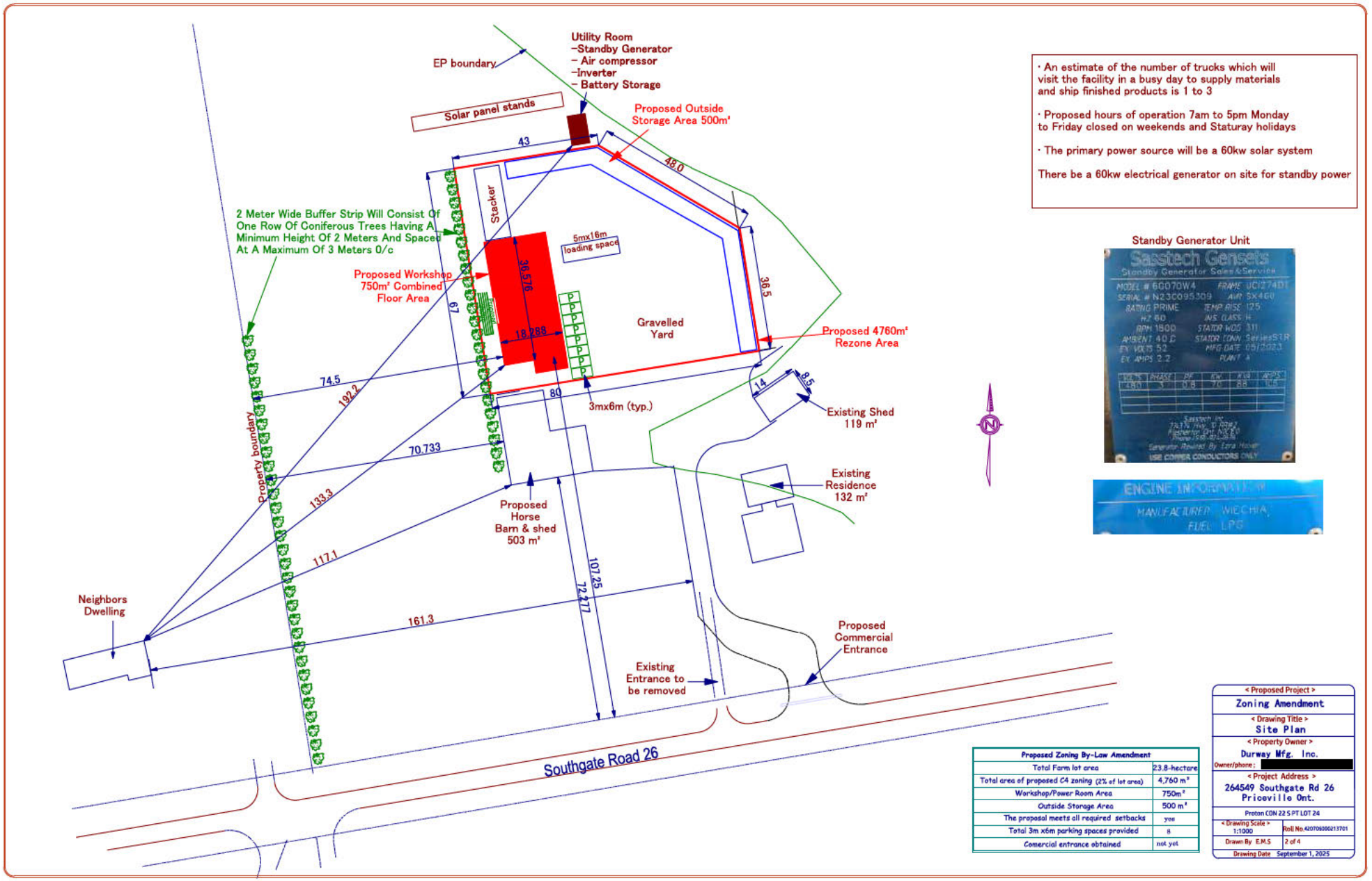


Figure 2 - Proposed Site Plan

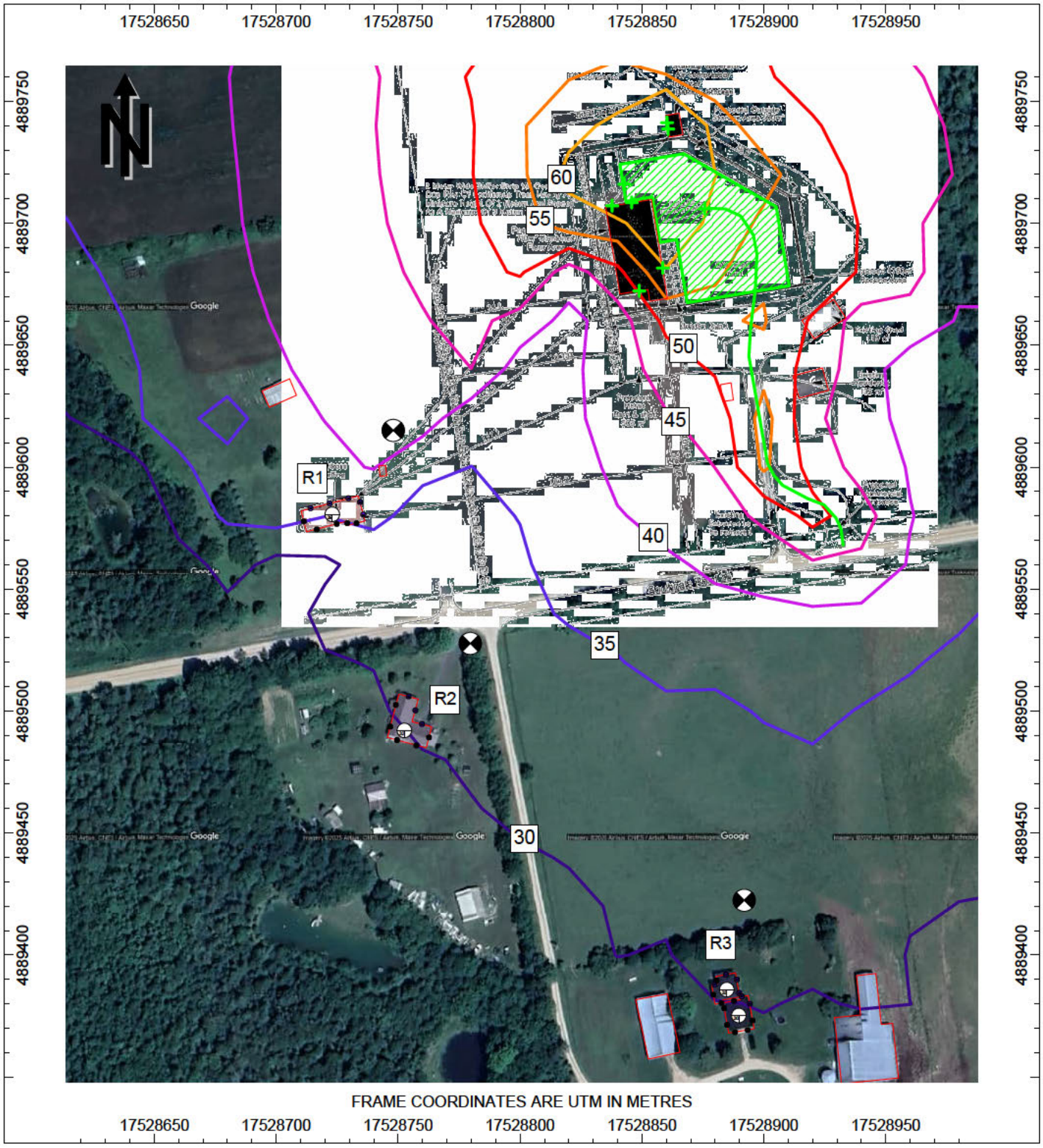


Figure 3 - Predicted Daytime Hour Steady Sources Sound Level Contours

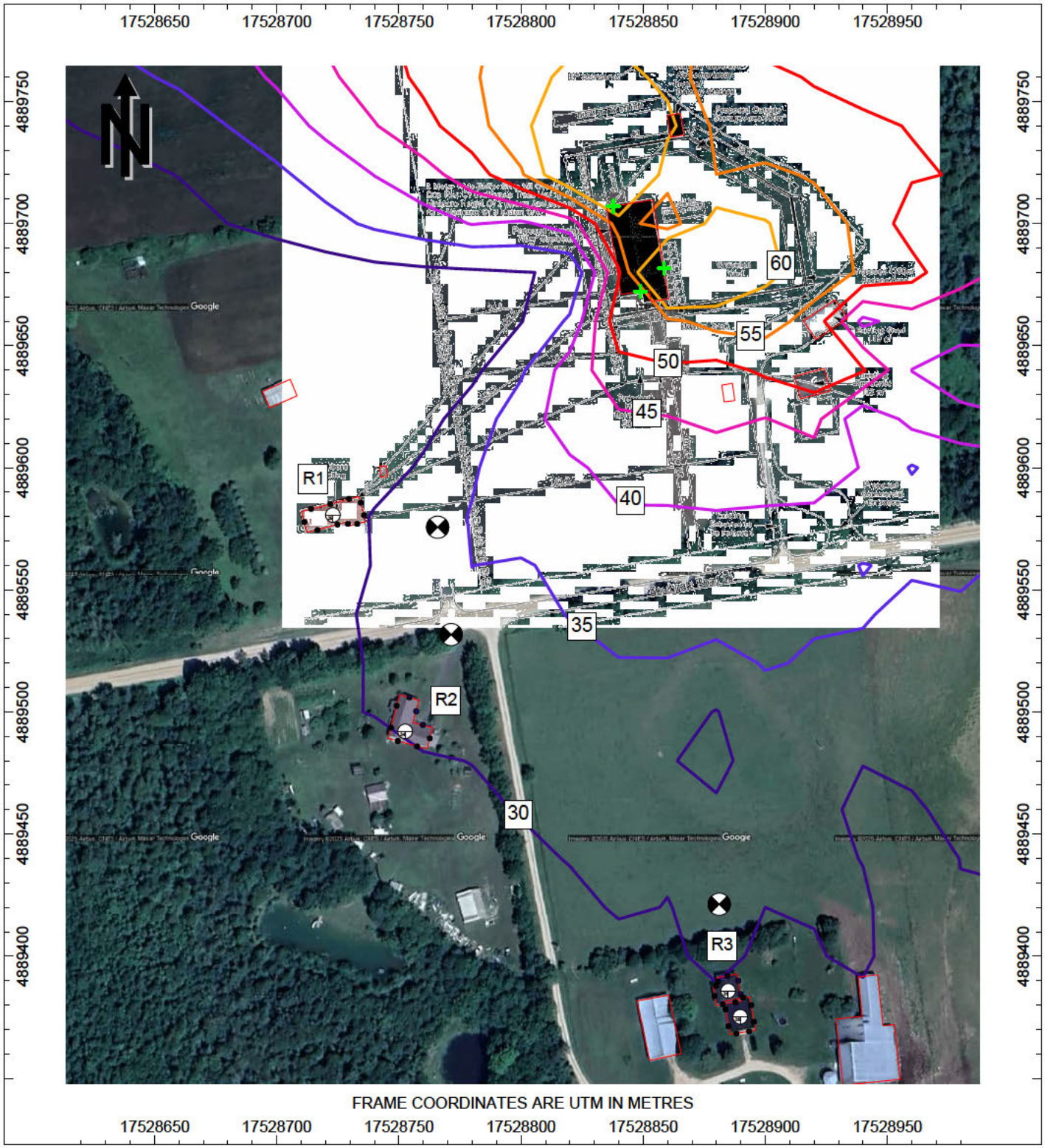
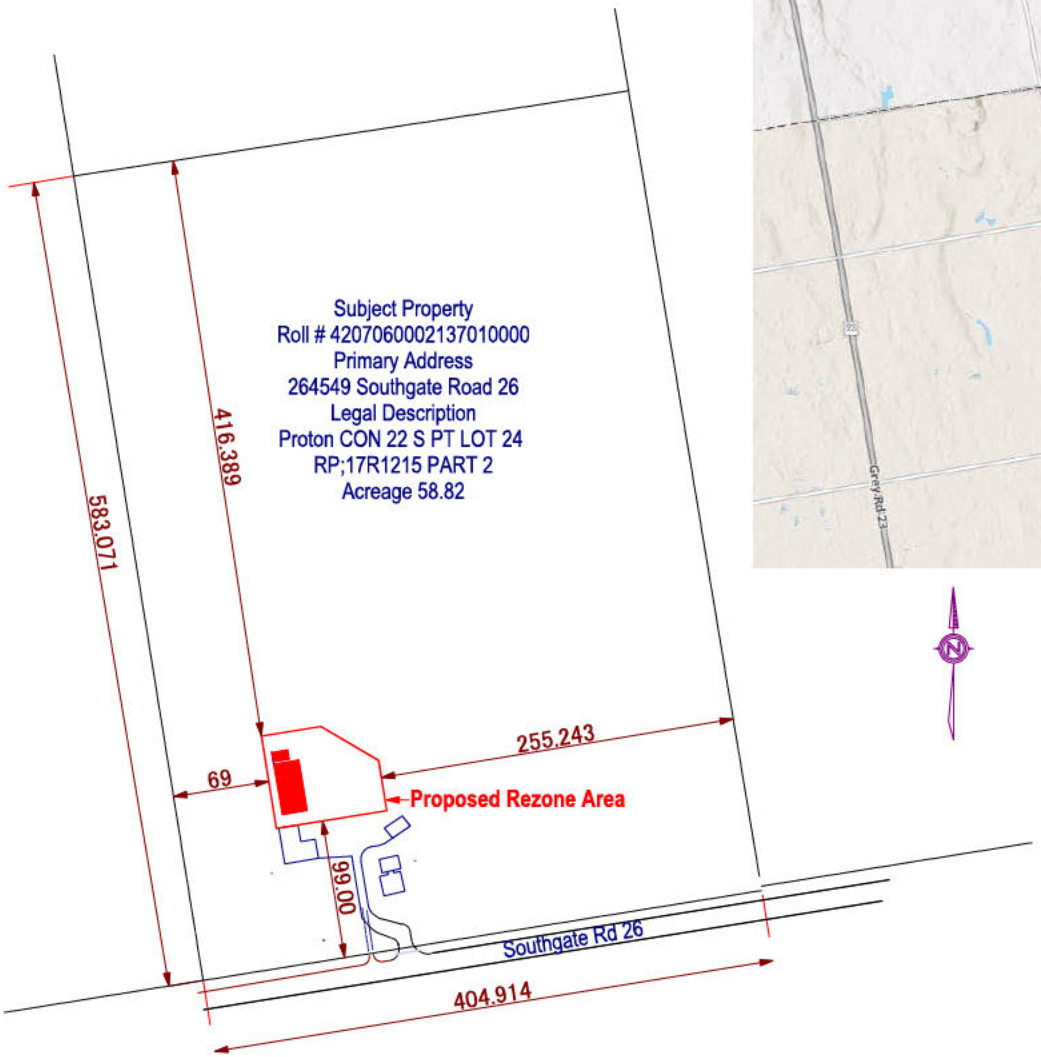
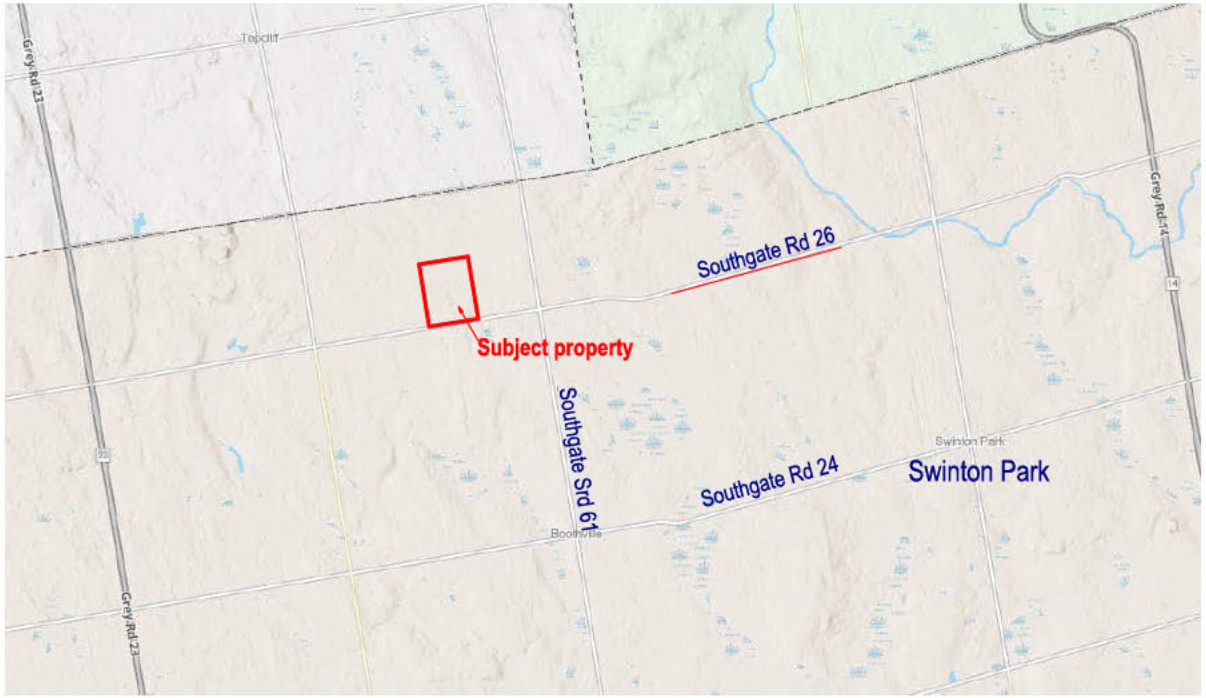


Figure 4 - Predicted Impulsive Sources Sound Level Contours

Appendix A
Supporting Drawings





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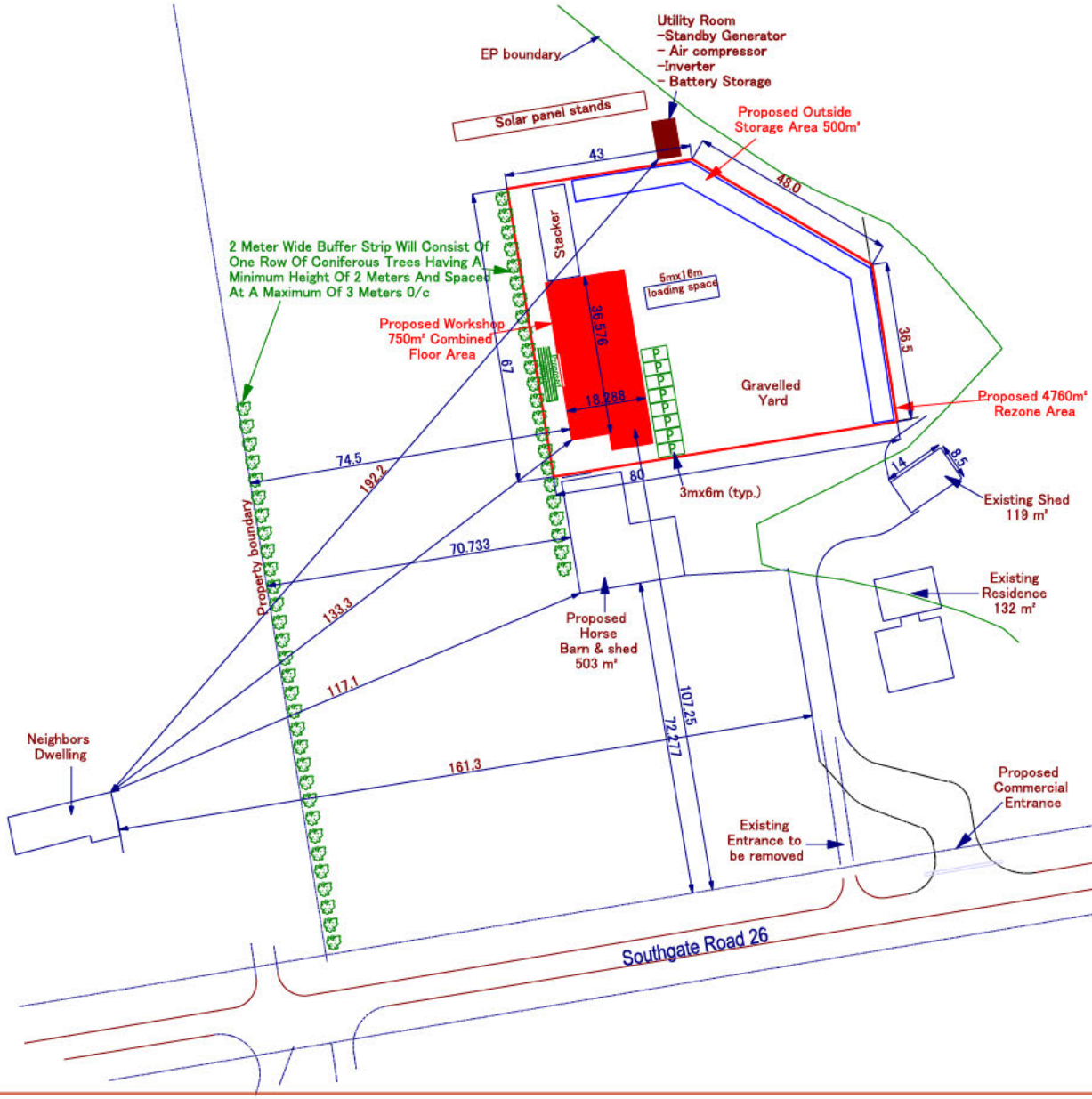

· An estimate of the number of trucks which will visit the facility in a busy day to supply materials and ship finished products is 1 to 3

· Proposed hours of operation 7am to 5pm Monday to Friday closed on weekends and Staturay holidays

· The primary power source will be a 60kw solar system

There be a 60kw electrical generator on site for standby power

Standby Generator Unit

Proposed Zoning By-Law Amendment	
Total Farm lot area	23.8-hectare
Total area of proposed C4 zoning (2% of lot area)	4,760 m²
Workshop/Power Room Area	750m²
Outside Storage Area	500 m²
The proposal meets all required setbacks	yes
Total 3m x6m parking spaces provided	8
Comercial entrance obtained	not yet

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Drawn By E.M.S	2 of 4
Drawing Date September 1, 2025	

Note:
The Truss components will be delivered to this shop pre-cut and ready for assembly

•The building will be ventilated with wall mounted fans and louvres

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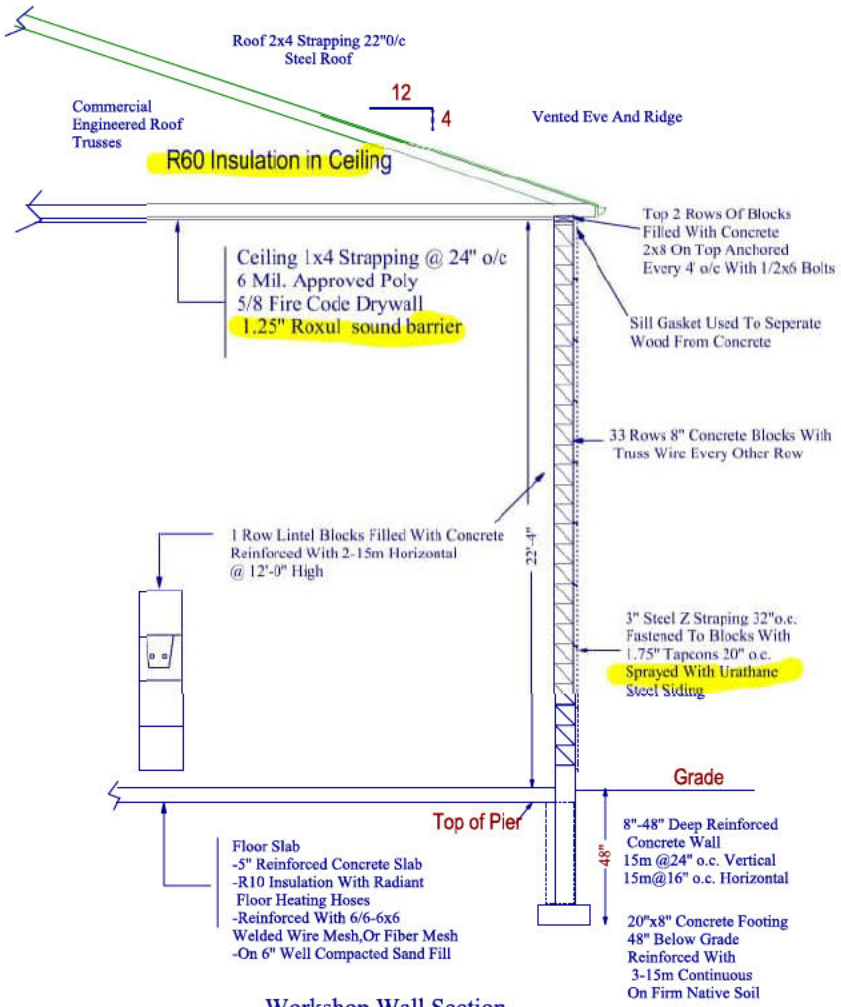
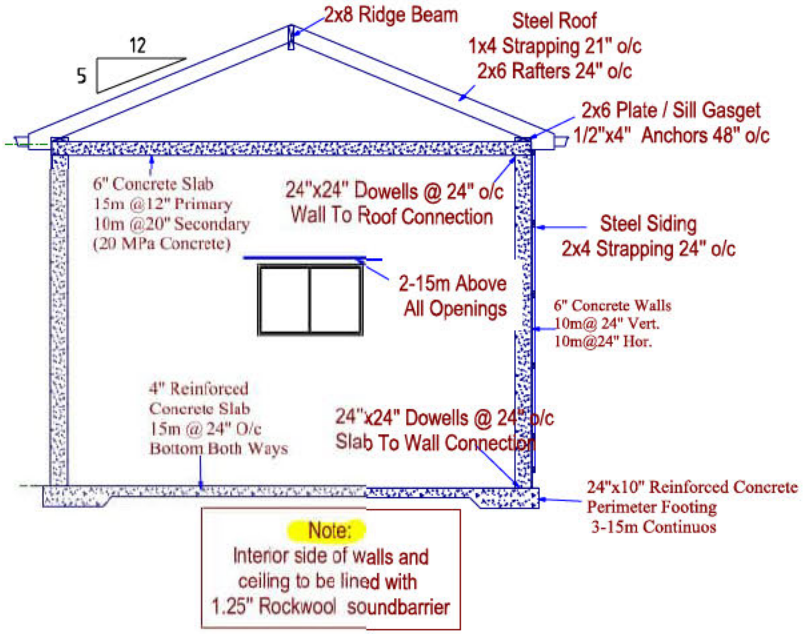


Workshop Wall Section



Utility Room

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4 of 4
Drawing Date September 1, 2025

Appendix B

Acoustical Assessment Methods & Results

The predictive model used for this Assessment (*Cadna-A version 2025, Build 209.5501*) is based on methods from ISO Standard 9613-2.2 “Acoustics - Attenuation of Sound During Propagation Outdoors”, which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as buildings. This modeling technique is acceptable to the MECP.

The subject site and surrounding area were modelled based on observations during the site visit. Foliage was not included in the modelling. Ground attenuation was assumed to be spectral for all sources, with a ground factor (G) of 0.5 for gravel areas and 0.9 for grass areas. The temperature and relative humidity were assumed to be 10° C and 70%, respectively. The reference times were Daytime 07:00 to 19:00, Evening 19:00 to 23:00 and Nighttime 23:00 to 07:00. All buildings in the model had an absorption coefficient alpha of 0.2.

The predictive modelling considered one order of reflection, the sufficiency of which was verified through an iterative convergence analysis, using successively increasing orders of reflection.

The workshop activity, exhaust fans, generator, air compressor, circular saw, and truck idling were modeled as point sources of sound, shown as green crosses in Figures 3 and 4. The truck movements were modeled as line sources of sound, shown as green lines in Figure 3. The forklift activity was modeled as an area sources of sound, shown as a green hatched area in Figure 3.

R1	17528748	4889615	486.3											
Src Name	X	Y	Z	LxD	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahous	CmetD	RefID	LrD
Exhaust Fan and Generator Outlet	17528862	4889742	481.0	83	55.6	0	0.0	2.6	2.2	1.0	0.0	0.0	0.0	0.0	22
Utility Inlet	17528862	4889738	481.2	87	55.5	0	0.0	1.8	2.7	1.7	0.0	0.0	0.0	0.0	26
Exhaust Fan	17528840	4889710	487.2	83	53.6	0	-3.9	2.0	16.1	0.1	0.0	0.0	0.0	0.0	7
Outfeed Door	17528834	4889706	483.9	80	53.2	0	-8.2	3.3	11.4	0.2	0.0	0.0	0.0	0.0	4
Garage Door	17528862	4889681	486.0	72	53.2	0	-11.1	3.3	19.6	0.5	0.0	0.0	0.0	0.0	--
Air Inlet	17528842	4889672	489.0	59	52.3	0	-4.3	1.4	0.0	0.7	0.0	0.0	0.0	2.2	2
Skill Saw	17528840	4889715	487.0	97	53.8	0	0.0	0.3	0.0	2.4	0.0	0.0	0.0	0.0	41
Idling Truck	17528872	4889705	486.7	89	54.9	0	0.0	2.0	14.7	0.6	0.0	0.0	0.0	0.0	17
Truck Movement	17528848	4889640	485.5	87	55.0	0	0.0	0.6	1.5	1.6	0.0	0.0	0.0	0.0	28
Forklift	17528840	4889699	483.4	92	54.8	0	0.0	1.7	7.4	1.2	0.0	0.0	0.0	0.0	27

R2	17528780	4889528	486.5											
Src Name	X	Y	Z	LxD	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahous	CmetD	RefID	LrD
Exhaust Fan and Generator Outlet	17528862	4889742	481.0	83	58.2	0	0.0	2.4	12.6	0.5	0.0	0.0	0.0	0.0	9
Utility Inlet	17528862	4889738	481.2	87	58.1	0	0.0	1.6	15.6	0.9	0.0	0.0	0.0	0.0	11
Exhaust Fan	17528840	4889710	487.2	83	56.7	0	-3.8	1.9	18.4	0.2	0.0	0.0	0.0	0.0	2
Outfeed Door	17528834	4889706	483.9	80	56.5	0	-8.0	3.0	14.1	0.2	0.0	0.0	0.0	0.0	--
Garage Door	17528862	4889681	486.0	72	55.8	0	-11.0	2.9	17.6	0.6	0.0	0.0	0.0	0.0	--
Air Inlet	17528842	4889672	489.0	59	55.1	0	6.6	1.4	0.0	1.0	0.0	0.0	0.0	0.0	8
Skill Saw	17528840	4889715	487.0	97	57.0	0	0.0	1.5	16.2	1.9	0.0	0.0	0.0	0.0	21
Idling Truck	17528872	4889705	486.7	89	57.1	0	0.0	1.2	9.4	1.0	0.0	0.0	0.0	0.0	20
Truck Movement	17528850	4889645	485.4	87	55.1	0	0.0	0.2	1.4	1.5	0.0	0.0	0.0	0.0	28
Forklift	17528840	4889712	483.4	92	56.8	0	0.0	1.7	4.8	1.3	0.0	0.0	0.0	0.0	28

R3	17528892	4889423	486.5											
Src Name	X	Y	Z	LxD	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahous	CmetD	RefID	LrD
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Utility Inlet	17528862	4889738	481.2	87	61.0	0	0.0	1.6	2.5	2.6	0.0	0.0	0.0	0.0	20
Exhaust Fan	17528840	4889710	487.2	83	60.2	0	-3.5	1.8	20.0	0.2	0.0	0.0	0.0	0.0	--
Outfeed Door	17528834	4889706	483.9	80	60.2	0	-7.9	2.5	18.5	0.4	0.0	0.0	0.0	0.0	--
Garage Door	17528862	4889681	486.0	72	59.3	0	-11.8	2.2	4.5	1.4	0.0	0.0	0.0	0.0	--
Air Inlet	17528842	4889672	489.0	59	59.1	0	9.3	1.9	0.0	1.5	0.0	0.0	0.0	0.0	6
Skill Saw	17528840	4889715	487.0	97	60.5	0	0.0	2.2	19.0	2.5	0.0	0.0	0.0	0.0	13
Idling Truck	17528872	4889705	486.7	89	60.1	0	0.0	0.2	0.0	1.8	0.0	0.0	0.0	0.0	27
Truck Movement	17528850	4889649	485.3	87	56.9	0	0.0	0.5	0.3	1.7	0.0	0.0	0.0	0.0	27
Forklift	17528838	4889676	483.3	92	59.7	0	0.0	1.9	2.6	1.8	0.0	0.0	0.0	0.0	26

R1	17528766	4889576	486.5											
Src Name	X	Y	Z	LxD	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahous	CmetD	RefID	LrD
Outfeed Door Imp	17528834	4889706	483.9	99	54.5	0	-10.4	4.1	14.6	0.7	0.0	0.0	0.0	0.0	15
Garage Door Imp	17528862	4889681	486.0	95	54.0	0	-11.7	2.3	19.8	0.7	0.0	0.0	0.0	0.0	6
Air Inlet	17528842	4889672	489.0	82	53.1	0	3.5	0.4	0.0	0.9	0.0	0.0	0.0	2.3	33

R2	17528772	4889532	486.5											
Src Name	X	Y	Z	LxD	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahous	CmetD	RefID	LrD
Outfeed Door Imp	17528834	4889706	483.9	99	56.5	0	-10.3	3.8	15.4	0.8	0.0	0.0	0.0	0.0	12
Garage Door Imp	17528862	4889681	486.0	95	55.8	0	-11.7	2.0	19.0	0.9	0.0	0.0	0.0	0.0	5
Air Inlet	17528842	4889672	489.0	82	55.1	0	6.0	0.3	0.0	1.1	0.0	0.0	0.0	2.3	34

R2	17528882	4889421	486.5											
Src Name	X	Y	Z	LxD	Adiv	K0	Dc	Agnd	Abar	Aatm	Afol	Ahous	CmetD	RefID	LrD
Outfeed Door Imp	17528834	4889706	483.9	99	60.2	0	-10.4	3.0	17.8	1.3	0.0	0.0	0.0	0.0	6
Garage Door Imp	17528862	4889681	486.0	95	59.3	0	-11.9	0.8	6.7	1.4	0.0	0.0	0.0	0.0	14
Air Inlet	17528842	4889672	489.0	82	59.1	0	9.2	0.5	0.0	1.6	0.0	0.0	0.0	1.6	31